

We claim:

1. A process for delivering a polynucleotide to a prostate cell in a mammal comprising:
 - a) inserting an injection solution containing the polynucleotide into the lumen of a vessel;
 - b) increasing permeability of the vessel to the polynucleotide;
 - c) delivering the polynucleotide to the prostate cell outside of the vessel; and,
 - d) expressing the polynucleotide.
2. The process of claim 1 wherein fluid flow out of the prostate tissue is impeded by occlusion of at least one vessel.
3. The process of claim 1 wherein the polynucleotide is selected from the list consisting of: DNA and RNA.
4. The process of claim 1 wherein the vessel consists of a blood vessel.
5. The process of claim 4 wherein the blood vessel consists of a vein.
6. The process of claim 4 wherein the blood vessel consists of an artery.
7. The process of claim 5 wherein the vein is selected from the list consisting of: prostatic venous plexus, prostatic vein, tributaries of the deep dorsal vein of the penis, dorsal vein of the penis, internal iliac vein, and vesical venous plexus, and their tributaries.
8. The process of claim 6 wherein the artery is selected from the list consisting of: inferior vesical artery, internal iliac artery, prostatic artery, internal pudic artery, hemorrhoidal artery, and rectal artery, and their tributaries.
9. The process of claim 1 where expression of the polynucleotide induces an immune response.
10. The process of claim 1 wherein the polynucleotide is associated with a transfection agent.
11. The process of claim 1 wherein the injection solution contains a compound that increases vascular permeability.
12. The process of claim 1 wherein expression of the polynucleotide alters the endogenous properties of the cell.
13. The process of claim 1 wherein the mammal has benign prostatic hyperplasia.
14. The process of claim 1 wherein the mammal has prostate cancer.

15. A process for expressing a gene in a prostate cell in vivo comprising: inserting an injection solution containing a polynucleotide encoding the gene into the lumen of an afferent or efferent blood vessel of the prostate and delivering the polynucleotide to the prostate cell outside the vessel wherein the polynucleotide is expressed.
16. A process for inhibiting expression of a gene in a prostate cell in a mammal comprising:
 - a) inserting an injection solution containing a polynucleotide into the lumen of a vessel;
 - b) increasing permeability of the vessel to the polynucleotide; and, c) delivering the polynucleotide to the prostate cell outside of the vessel.
17. The process of claim 16 wherein the polynucleotide induces RNA interference.
18. The process of claim 16 wherein the polynucleotide consists of siRNA.
19. The process of claim 16 wherein the gene is an endogenous gene.
20. The process of claim 16 wherein expression of the polynucleotide alters the endogenous properties of the cell.